



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT APPLICATION

Applicant: Shalvi, et al.

Appl. No.: 09/755,970

Filed: 1/5/01

Title: Method and Device for Sending Downstream Channels
Using a Single Upconverter

Grp./A.U.: 2611

Examiner:

Docket No.: TI-30924

Assistant Commissioner for Patents
Washington, DC 20231

CERTIFICATE OF MAILING 37 CFR §1.8(a)

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PRELIMINARY AMENDMENT (37 CFR § 115)

Sir:

Prior to examination, please amend the above-identified application as follows:

In the Title:

Please amend the title to the following new title:

-- Method for Transmitting Multiple Downstream CATV Channels Using a Single
Upconverter --.

In the Specification:

Please amend the specification (including Abstract) by replacing the original specification
with the substitute specification attached hereto as Exhibit A.

The attached substitute specification includes no new matter.

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A marked-up version of the original specification showing all changes to (including the matter being added to and the matter being deleted from) the specification of record is attached hereto as Exhibit B.

In the Claims:

Cancel claims 4, 6, and 8 - 27.

Amend claims 1 - 3, 5 and 7, as follows:

-- 1. (amended) A method of data transmission over a cable television network between a cable modem termination system headend and consumer premises equipment, comprising:

 providing a first digital data stream signal associated with a first cable television channel;

 providing a second digital data stream signal associated with a second cable television channel;

 combining the first and second digital data stream signals to create a first combined digital data stream signal;

 converting the first combined digital data stream signal to a modulated first analog signal, the first analog signal having a central frequency; and

 upshifting the central frequency of the first analog signal to create a cable network transmittable analog signal having a frequency suited for transmission along a cable network transmission medium. --

-- 2. (amended) The method according to Claim 1, further comprising:

 providing a third digital data stream signal associated with a third cable television channel;

 providing a fourth digital data stream signal associated with a fourth cable television channel;

 digitally combining the third and fourth digital data stream signals to create a second combined digital data stream signal;

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converting the second combined digital data stream signal to a modulated second analog signal having another central frequency; and

combining the first analog signal and the second analog signal to create a combined analog signal having a plurality of central frequencies, wherein upshifting the first analog signal central frequency comprises upshifting the central frequencies of the combined analog signal. --

-- 3. (amended) The method according to Claim 2, wherein digitally combining the first and second digital data stream signals comprises multiplexing the first and second digital data stream signals, and wherein digitally combining the third and fourth digital data stream signals comprises multiplexing the third and fourth digital data stream signals. --

--5. (amended) The method according to Claim 3, further comprising filtering the first and second analog signals prior to upshifting. --

-- 7. (amended) The method according to Claim 1, further comprising transmitting the upshifted first analog signal in a downstream direction from the headend to the consumer premises equipment using a bandwidth wider than bandwidth of the first or second channels alone. --

Add new claims 28 - 39, as follows:

-- 28. (new) The method according to claim 1, wherein the first and second digital data stream signals are respectively associated with adjacent cable television network channels. --

-- 29. (new) The method according to claim 28, wherein the wider bandwidth corresponds to the combined bandwidths allocated for separate transmission of the adjacent cable television network channels. --

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-- 30. (new) The method according to claim 1, wherein digitally combining the first and second digital data stream signals comprises multiplexing the first and second digital data streams. --

-- 31. (new) The method according to claim 1, further comprising filtering the first analog signal prior to upshifting. --

--32. (new) The method according to claim 1, wherein the first and second digital data streams are converted from digital to analog by means of a common digital-to-analog data converter. --

-- 33. (new) A method of transmission of adjacent cable television channel broadcasts over a cable television network from a cable modem termination system headend to a consumer premises equipment, comprising:

providing a first digital data stream signal associated with a first cable television channel;

providing a second digital data stream signal associated with a second cable television network channel adjacent to the first cable television channel;

combining and converting the first and second digital data stream signals into a modulated analog signal, the analog signal having a central frequency;

upshifting the central frequency of the analog signal to a higher central frequency; and

transmitting the analog signal in a downstream direction from the headend to the consumer premises equipment along a cable network transmission medium, using a bandwidth corresponding to a bandwidth of the combined adjacent channels. --

-- 34. (new) The method according to claim 33, wherein, in the combining and converting step, the first and second digital data stream signals are digitally combined to create a combined digital data stream signal; and the combined digital data stream signal is converted into the modulated analog signal. --

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-- 35 (new) The method according to claim 34, wherein digitally combining the first and second digital data stream signals comprises multiplexing the first and second digital data streams. --

-- 36. (new) The method according to claim 35, further comprising filtering the first analog signal prior to upshifting. --

-- 37. (new) A method of transmission of adjacent cable television channel broadcasts over a cable television network from a cable modem termination system headend to a consumer premises equipment, comprising:

providing a first digital data stream signal associated with a first cable television channel;

providing a second digital data stream signal associated with a second cable television network channel adjacent to the first cable television channel;

converting the first digital data stream signal to a modulated first analog signal, the first analog signal having a first central frequency;

converting the second digital data stream signal to a modulated second analog signal, the second analog signal having a second central frequency;

combining the first and second analog signals to create a combined analog signal;

upshifting the combined analog signal to higher frequency; and

transmitting the upshifted combined analog signal in a downstream direction from the headend to the consumer premises equipment along a cable network transmission medium, using a bandwidth corresponding to a bandwidth of the combined adjacent channels. --

-- 38. (new) The method according to claim 37, wherein combining the first and second analog signals comprises summing the first and second analog signals. --

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-- 39. (new) The method according to claim 38, further comprising filtering the first and second analog signals prior to upshifting the combined analog signal. --

REMARKS

A substitute specification is submitted herewith. The substitute specification makes numerous amendments in order to improve readability of the original specification. Most of the changes are of a spelling, grammatical and other formal, rather than substantive, nature. No new matter is introduced thereby.

The changes to paragraph [0015], though arguably substantive, also do not introduce new matter. They are merely corrections and clarifications made consistent with the rest of the specification and with the background knowledge and understanding of persons of average skill in the art to which the invention relates. It is well known and should be subject to judicial notice, for example, that CATV channels in the United States are allocated into 6MHz bandwidth channels across a frequency spectrum which runs from below 100 MHz to above 700 MHz; that upshift typically takes place from less than 100 MHz (typically, a 44MHz IF signal) to a respective target channel frequency for each data stream associated with a corresponding channel; and that the target channel transmission frequencies maybe in a range of, for example, 88 to 860 MHz. (which is the range that corresponds to the downstream RF transmission channels of nominal 6 MHz bandwidth each, whose characteristics are listed in Table 2-1 on page 8 of the DOCSIS Radio Frequency Interface Specification SP-RFI-105-991105).

The title has been changed. Please change the Office database records to indicate the change in title.

Claims 4, 6 and 8 - 27 have been cancelled. Claims 1 - 3, 5 and 7 have been amended. A marked-up version of original claims 1 - 3, 5 and 7 with markings showing changes is given below. New claims 28 - 39 have been added. Amendments to existing claims are made prior to examination, not in response to any Office action, so should be given the same scope and construction as they would be entitled to, if presented in the first instance herein. Only method

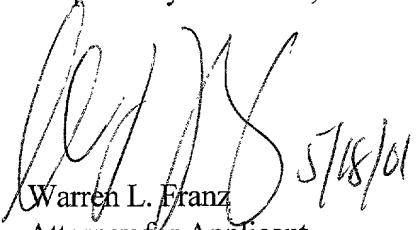
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claims remain. Device claims 8 - 27 are cancelled without prejudice to pursue the same or other device claims in a later filed divisional or other related application.

Request is made for acceptance of the substitute specification, amendment of the application as indicated, and allowance of the claims as amended.

Respectfully submitted,


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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Claims 4, 6 and 8 - 27 are cancelled.

Claims 28 - 37 are added.

Claims 1 - 3, 5 and 7 are amended as shown below:

1. (amended) A method of data transmission over a cable television network between a cable modem termination system headend and consumer premises equipment, comprising:

[generating a plurality of first digital signals;]

providing a first digital data stream signal associated with a first cable television channel;

providing a second digital data stream signal associated with a second cable television channel;

[digitally] combining [at least two of] the first and second digital data stream signals to create a first combined digital data stream signal;

converting the first combined digital data stream signal to a modulated first analog signal, the first analog signal having a central frequency; and

upshifting the central frequency of the first analog signal to create a cable network transmittable analog signal having a frequency suited for transmission along a cable network transmission medium.

2. (amended) The method according to Claim 1, further comprising:

providing a third digital data stream signal associated with a third cable television channel;

providing a fourth digital data stream signal associated with a fourth cable television channel;

[generating a plurality of second digital signals;]

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[digitally] combining [at least two of] the [second] third and fourth digital data stream signals to create a second combined digital data stream signal;

converting the second combined digital data stream signal to a modulated second analog signal having another central frequency; and

combining the first analog signal and the second analog signal to create a combined analog signal having a plurality of central frequencies, wherein upshifting the first analog signal central frequency comprises upshifting the central frequencies of the combined analog signal.

3. (amended) The method according to Claim 2, wherein digitally combining [at least two of] the first and second digital data stream signals comprises multiplexing the first and second digital data stream signals, and wherein digitally combining [at least two of] the [second] third and fourth digital data stream signals comprises multiplexing the [second] third and fourth digital data stream signals.

5. (amended) The method according to Claim [4] 3, further comprising[:] filtering the first and second analog signals prior to upshifting [after converting to a first analog signal; and filtering the second analog signal after converting to a second analog signal]. --

7. (amended) The method according to Claim 1, further comprising[:] transmitting the [transmittable] upshifted first analog signal in a downstream direction from the headend to the consumer premises equipment using a bandwidth wider than bandwidth of the first or second channels alone.--